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10/602,294	06/23/2003	Venkat Selvamanickam	SPP 18.815	1196

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EXAMINER	
MOORE, KARLA A	

ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 10/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/602,294	SELVAMANICKAM ET AL.	
	Examiner	Art Unit	
	Karla Moore	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-9 and 22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-9 and 22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-2, 4, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,453,264 to Maguire et al. in view of U.S. Patent No. 5,151,303 to Hales et al. and U.S. Patent No. 4,793,908 to Scott et al. and U.S. Patent No. 5,196,100 to Goffetre et al.

5. Maguire et al. disclose the invention substantially as claimed in Figures 1 and 9 and comprising: a vacuum coating apparatus for coating a substrate tape (not numbered in Figure 9) capable of utilizing pulsed laser deposition (PLD) and a reel to reel transport system (911 and 913) comprising: one or more

deposition chambers (900) comprises a substrate heater (912, column 7, rows 52-53), a motorized target manipulator (918a) and at least one target (916) mounted on the target manipulator where the target manipulator imparts rotary motion to the at least one target (column 3, rows 37-45); the one or more deposition chambers each have the substrate heater and the target manipulator disposed therein such that the heater and the at least one target manipulator define a deposition zone therebetween; and the exterior wall of the apparatus contains openings for at least one laser beam (110).

6. However, Maguire et al. fail to teach the vacuum coating apparatus as a multi-chamber coating apparatus comprising a payout spool chamber containing at least one spool of uncoated substrate tape, a take-up spool chamber capable of accommodating at least one spool of coated substrate tape and the payout chamber, deposition chamber and take-up chamber each having an opening therein of sufficient dimension to permit at least one tape substrate to be inserted therethrough.

7. Hales et al. teach the use of a multi-chamber deposition apparatus in Figure 1, comprising a payout chamber (10b), multiple deposition chambers and a take-up chamber (10c), wherein each chamber has openings (29) to permit the insertion of a tape substrate therethrough for the purpose of reducing outgassing that occurs in the processing chamber by evacuating the pay-out and take-up chamber separately from the processing chamber over time, also the apparatus allows for changing the coils/spools easily without loss of vacuum and storage of a processed substrate in a protected environment until shipped or further processed (column 2, rows 18-21 and 40-44).

8. It would have been obvious to one or ordinary skill in the art at the time the Applicant's invention was made to have provided a multi-chamber apparatus with a payout chamber and take-up chamber connected to a deposition chamber through openings permitting insertion of a substrate in Maguire et al. in order to reduce outgassing that occurs in a processing chamber by evacuating the pay-out and take-up chamber separately from the processing chamber over time, also, to allow the coils/spools to be changed easily without loss of vacuum and to allow a processed substrate to be stored in a protected environment until shipped or further processed as taught by Hales et al.

9. Maguire et al. and Hales et al. disclose the invention substantially as claimed and as described above.

10. However, Maguire et al. and Hales et al. fail to teach the target manipulator also imparting oscillatory motion to the target.

11. Scott et al. teach oscillating the a target surface during a deposition process onto a substrate for the purpose of promoting a more uniform vapor cloud which enhances the uniformity of condensation of the vapor on substrate surfaces (column 5, rows 45-52).

12. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a target capable of oscillation in Maguire et al. and Hales et al. in order to promote a more uniform vapor cloud that enhances the uniformity of condensation of the vapor on substrate surfaces as taught by Scott et al.

13. Maguire et al., Scott et al. and Hales et al. disclose the invention substantially as claimed and as described above.

14. However, Maguire et al., Scott et al. and Hales et al. fail to disclose the spool chambers sized to accommodate from about 2 to about 20 spools of substrate tape.

15. Goffetre et al. teach the use of a spooling chamber able to accommodate a number of spools so that they can be spooled out of the chamber together using a single spindle, deposited on in a single deposition chamber and subsequently received in a take-up chamber together on a single spindle (column 2, row 59 through column 3, row 10).

16. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a spooling chamber capable of accommodating from about 2 to about 20 spools in Maguire et al., Scott et al. and Hales et al. in order to process substrates on a number of spools together as taught by Goffetre et al.

17. Examiner also notes that in In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955) (Claims directed to a lumber package "of appreciable size and weight requiring handling by a lift truck" where held unpatentable over prior art lumber packages which could be lifted by hand because limitations relating to the size of the package were not sufficient to patentably distinguish over the prior art.); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976) ("mere scaling up of a prior art process capable of being scaled up, if such were the case,

would not establish patentability in a claim to an old process so scaled." 531 F.2d at 1053, 189 USPQ at 148.). Also, in In Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

18. With respect to claim 2, there is one deposition chamber in Maguire et al.

19. With respect to claim 4, the exterior wall of the apparatus contains openings for multiple laser beams. An additional laser beam from source (920) can enter through an opening in the chamber.

20. With respect to claim 7, as described above, Goffetre et al. teach providing a spooling chamber capable of accommodating however many spools of substrate are desired to be deposited on.

21. With respect to claim 9, the apparatus of Hales et al. also contains seals (column 2, rows 21-23) in the openings in the chamber walls to maintain a selected pressure differential between the different chambers.

22.

23. Claims 3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maguire et al., Hales et al. and Scott et al. as applied to claims 1-2, 4, 7 and 9 and further in view of U.S. Patent No. 4,389,970 to Edgerton.

24. Maguire et al., Hales et al. and Scott et al. disclose the invention substantially as claimed and as described above.

25. However, Maguire et al., Hales et al. and Scott et al. fail to teach the heater is a multi-zone heater.

26. Edgerton teaches the use of a multi-zone heater for raising and maintaining a continuous substrate at a predetermined deposition temperature, wherein the heaters/lamps are spaced apart along the length of travel to provide a desired heating profile (abstract). There are at least three zones created by heaters/lamps (see Figure 3A, 106).

27. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a multi-zone heater in Maguire et al., Hales et al. and Scott et al. in order to raise and maintain the continuous substrate at a predetermined deposition temperature using heaters/lamps that are spaced apart along the length of travel to provide a desired heating profile as taught by Edgerton.

28. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maguire et al., Hales et al. and Scott et al. as applied to claims 1-2, 4, 7 and 9 and further in view of U.S. Patent No. 5,490,912 to Warner et al.

29. Maguire et al., Hales et al. and Scott et al. disclose the invention substantially as claimed and as described above.

30. However, Maguire et al., Hales et al. and Scott et al. fail to teach multiple targets are mounted on the target manipulator.

31. Warner et al. teaches placing multiple targets (Figure 2, 38) on a target manipulator (Figures 1 and 2, 20) for the purpose of introducing a fresh supply of target material without shutting down the deposition chamber (column 6, rows 19-34).

32. It would have been obvious to one or ordinary skill in the art at the time the Applicant's invention was made to have provided multiple targets mounted on the manipulator in Maguire et al., Hales et al. and Scott et al. in order to introduce a fresh supply of target material without shutting down the deposition chamber as taught by Warner et al.

33. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,453,264 to Maguire et al. in view of U.S. Patent No. 5,151,303 to Hales et al., U.S. Patent No. 4,793,908 to Scott et al. and U.S. Patent No. 6,770,175 to Domoto et al.

34. Maguire et al. disclose the invention substantially as claimed in Figures 1 and 9 and comprising: a vacuum coating apparatus for coating a substrate tape (not numbered in Figure 9) capable of utilizing pulsed laser deposition (PLD) and a reel to reel transport system (911 and 913) comprising: one or more deposition chambers (900) comprises a substrate heater (912, column 7, rows 52-53), a motorized target

manipulator (918a) and at least one target (916) mounted on the target manipulator where the target manipulator imparts rotary motion to the at least one target (column 3, rows 37-45); the one or more deposition chambers each have the substrate heater and the target manipulator disposed therein such that the heater and the at least one target manipulator define an extended deposition zone therebetween; and the exterior wall of the apparatus contains openings for at least one laser beam (110).

35. However, Maguire et al. fail to teach the vacuum coating apparatus as a multi-chamber coating apparatus comprising a payout spool chamber containing at least one spool of uncoated substrate tape, a take-up spool chamber capable of accommodating at least one spool of coated substrate tape and the payout chamber, deposition chamber and take-up chamber each having an opening therein of sufficient dimension to permit at least one tape substrate to be inserted therethrough.

36. Hales et al. teach the use of a multi-chamber deposition apparatus in Figure 1, comprising a payout chamber (10b), multiple deposition chambers and a take-up chamber (10c), wherein each chamber has openings (29) to permit the insertion of a tape substrate therethrough for the purpose of reducing outgassing that occurs in the processing chamber by evacuating the pay-out and take-up chamber separately from the processing chamber over time, also the apparatus allows for changing the coils/spools easily without loss of vacuum and storage of a processed substrate in a protected environment until shipped or further processed (column 2, rows 18-21 and 40-44).

37. It would have been obvious to one or ordinary skill in the art at the time the Applicant's invention was made to have provided a multi-chamber apparatus with a payout chamber and take-up chamber connected to a deposition chamber through openings permitting insertion of a substrate in Maguire et al. in order to reduce outgassing that occurs in a processing chamber by evacuating the pay-out and take-up chamber separately from the processing chamber over time, also, to allow the coils/spools to be changed easily without loss of vacuum and to allow a processed substrate to be stored in a protected environment until shipped or further processed as taught by Hales et al.

38. Maguire et al. and Hales et al. disclose the invention substantially as claimed and as described above.

39. However, Maguire et al. and Hales et al. fail to teach the target manipulator also imparting oscillatory motion to the target.

40. Scott et al. teach oscillating the a target surface during a deposition process onto a substrate for the purpose of promoting a more uniform vapor cloud which enhances the uniformity of condensation of the vapor on substrate surfaces (column 5, rows 45-52).

41. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a target capable of oscillation in Maguire et al. and Hales et al. in order to promote a more uniform vapor cloud that enhances the uniformity of condensation of the vapor on substrate surfaces as taught by Scott et al.

42. Maguire et al., Scott et al. and Hales et al. disclose the invention substantially as claimed and as described above.

43. However, Maguire et al., Scott et al. and Hales et al. fail to multiple targets arranged linearly along the target manipulator, wherein the multiple targets are positioned to create multiple overlapping plumes along the extended deposition zone.

44. Domoto et al. teach using multiple targets arranged linearly (with respect to a substrate tape to be coated upon), wherein the targets are positioned to create multiple overlapping plumes along the extended deposition zone for the purpose of forming a layer comprising more than one material with excellent reproducibility and a composition that can be readily controlled (abstract).

45. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided multiple targets arranged linearly (with respect to a substrate tape to be coated upon), wherein the targets are positioned to create multiple overlapping plumes along the extended deposition zone in Maguire et al., Scott et al., and Hales et al. in order to form a layer comprising more than one material with excellent reproducibility and a composition that can be readily controlled as taught by Domoto et al.

Allowable Subject Matter

46. The indicated allowable subject matter of claims 6 and 7 is withdrawn in view of the newly discovered reference(s) to Goffetre et al. Rejections based on the newly cited reference(s) are above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 9:00 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571.272.1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Karla Moore
Patent Examiner
Art Unit 1763
18 February 2005